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CLOTHES DRIER

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Claims

1. A type of clothes drier characterized by the fact that it has the following means: a drying chamber for accommodating clothes; a drying means that feeds a flow of drying air into said drying chamber; a spray-type container that sprays a liquid finishing agent; a container installation part that enables installation, in a quick-connecting/disconnecting way, of said spray-type container for introducting said sprayed finishing agent into said drying chamber; and a manipulating means that manipulates said installed spray-type container in order to introduce the finishing agent.

2. A type of clothes drier characterized by the fact that it has the following means: a drying chamber for accommodating clothes; a drying means that feeds a flow of drying air into said drying chamber; a container that holds a liquid finishing agent; a connecting port that connects said container and said drying chamber; and a rotating body that is partially dipped in the finishing agent while rotating so as to spray said finishing agent through said connecting port into said drying chamber.

ELECTROSTATIC AEROSOL COMPOSITIONS

The present invention relates to aerosol compositions and, in particular, compositions in which the droplets are imparted with an electrostatic charge on spraying from an aerosol spray device and in which the electrostatic charge on the droplets is maximised through the inclusion in the compositions of certain selected components.

Aerosol spray devices are a convenient form in which a variety of useful products, such as insecticides, air fresheners, antiperspirants, hair sprays, horticultural products, waxes and polishes, oven cleaners, starches and fabric finishes, shoe and leather care products, glass cleaners and various other household, institutional, professional or industrial products, can be dispensed.

The utility of aerosol spray devices resides in the ability to readily deliver the composition contained within the device in the form of fine droplets to the target area, for example the spraying of an insecticide onto target insects.

In WO 97/28883 there is described a method of precipitating airborne particles from air in a domestic environment containing such particles in which the air to be treated is sprayed with liquid droplets from an aerosol spray device with a unipolar charge being imparted to the droplets during the spraying of the liquid droplets by the aerosol spray device, the unipolar charge being at a level such that the droplets have a charge to mass ratio of at least $+/- 1 \times 10^{-4}$ C/kg.

In WO 99/01227 there is described a method of killing flying insects by spraying into the air in which the insects are flying liquid droplets of an

insecticidal composition, a unipolar charge being imparted to the liquid droplets by double layer charging and charge separation during spraying, the unipolar charge being at a level such that the said liquid droplets have a charge to mass ratio of at least +/- 1 x 10^{-4} C/kg. An apparatus for imparting the unipolar charge of this magnitude to a liquid composition is also described.

We have now found that by careful selection of the components which are to be contained within a liquid composition for application by aerosol spraying, it is possible to charge the liquid droplets during the spraying operation without requiring any special features of the construction of the aerosol spraying head.

Accordingly, in one aspect the present invention provides an electrically neutral composition in the form of a water-in-oil or an oil-in-water emulsion, in which droplets of the emulsion on discharge from an aerosol spray device are imparted with a unipolar electrostatic charge, which composition comprises:

(a) at least one propellant in an amount of from 2 to 80% w/w;

(b) at least one non-ionic surfactant in an amount of from 0.01 to 10% w/w;

(c) optionally one or more oils or solvents, preferably aliphatic, linearly conjugated or aromatic, within the oil phase in an amount of up to 80% w/w, preferably up to 40% w/w;

(d) at least one polar or ionic or aromatic or conjugated compound in an amount of from 0.01 to 80% w/w based on the non-ionic surfactant, but which is such that the theoretical conductivity of the emulsion is less than the bulk conductivity of the emulsion; and

(e) water.

In a second aspect the present invention provides a method of enhancing the unipolar charge which is imparted to droplets of an emulsion on discharge from an aerosol spray device in which the droplets are formed from an oil-in-water or a water-in-oil emulsion composition which comprises:

(a) at least one propellant in an amount of from 2 to 80% w/w;

(b) at least one non-ionic surfactant in an amount of from 0.01 to 10% w/w;

(c) optionally one or more oils or solvents, preferably aliphatic, linearly conjugated or aromatic, within the oil phase in an amount of up to 80% w/w. preferably up to 40% w/w;

(d) at least one polar or ionic or aromatic or linearly conjugated compound in an amount of from 0.1 to 80% w/w based on the non-ionic surfactant, but which is such that the theoretical conductivity of the emulsion is less than the bulk conductivity of the emulsion; and

(e) water.

In a third aspect the present invention provides the use of a non-ionic surfactant and at least one polar or ionic or

aromatic or conjugated compound in an amount of from 0.01 to 80% w/w based on the non-ionic surfactant to enhance the electrostatic charge imparted to droplets of a composition in the form of a water-in-oil or an oil-in-water emulsion on discharge from an aerosol spray device, which composition includes:

(a) at least one propellant in an amount of from 2 to 80% w/w;

(b) optionally one or more oils or solvents, preferably aliphatic, linearly conjugated or aromatic,

within the oil phase in an amount of up to 80% w/w, preferably up to 40% w/w; and

(c) water;

and the amount of the polar or ionic or aromatic or conjugated compound being such that the theoretical conductivity of the emulsion is less than the bulk conductivity of the emulsion.

The liquid droplets preferably have a charge to mass ratio of at least +/- 1 x 10^{-4} C/kg, more preferably at least +/- 2 x 10^{-4} C/kg. The higher the charge to mass ratio of the liquid droplets, the more effective the liquid droplets will be for their intended use, such as precipitating airborne particles